Find Functions: MetaCyc

IMG includes the MetaCyc collection of pathways available from http://www.metacyc.org/. IMG genomes are associated with MetaCyc pathways via enzymes predicted using PRIAM.

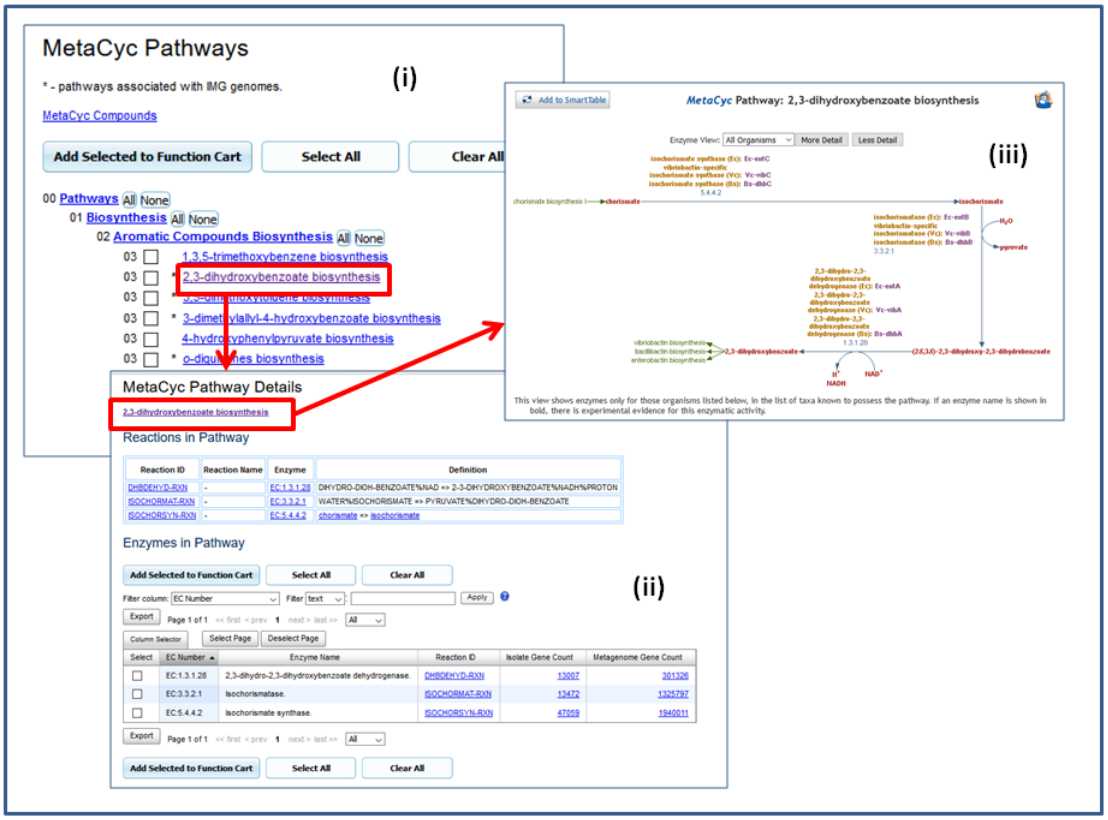

Figure 1. MetaCyc Pathways.

From the **Find Functions** top-level menu, the **MetaCyc** option on the second-level menu leads to the MetaCyc Pathways browser, as shown in Figure 1(i). MetaCyc pathways associated with IMG genomes are marked. MetaCyc pathways are organized hierarchically within broad categories: *biosynthesis*, *bioluminescence*, *detoxification*, *generation of precursor metabolites and energy*, *metabolic clusters*, and *superpathways*. Each category is organized in sub-categories (classes) of pathways.

MetaCyc pathways can be examined using the MetaCyc Pathway Details pages, as shown in Figure 1(ii). The MetaCyc Pathway Details provides a link to the specification of the pathway at the MetaCyc site, as illustrated in Figure 1(iii), together with a list of the enzymes associated with a specific reaction in the pathway. For each enzyme, the number of genes associated with this enzyme is also provided, together with a link that leads to the list of these genomes and genes. By clicking on the left-column checkbox for

an enzyme entry in the MetaCyc Pathway Details page, enzymes can be added to the Function Cart for further analysis.

Clicking on a Reaction ID from the MetaCyc Pathway Details page (Figure 1(ii)) will lead to a MetaCyc Reaction Detail page as shown in Figure 2(i). Clicking on a gene count will lead to a list of genomes having genes annotated with the corresponding enzyme (Figure 2(ii)). Genomes can be added to the Genome Cart for further analysis. Clicking on the gene count to view the actual genes.

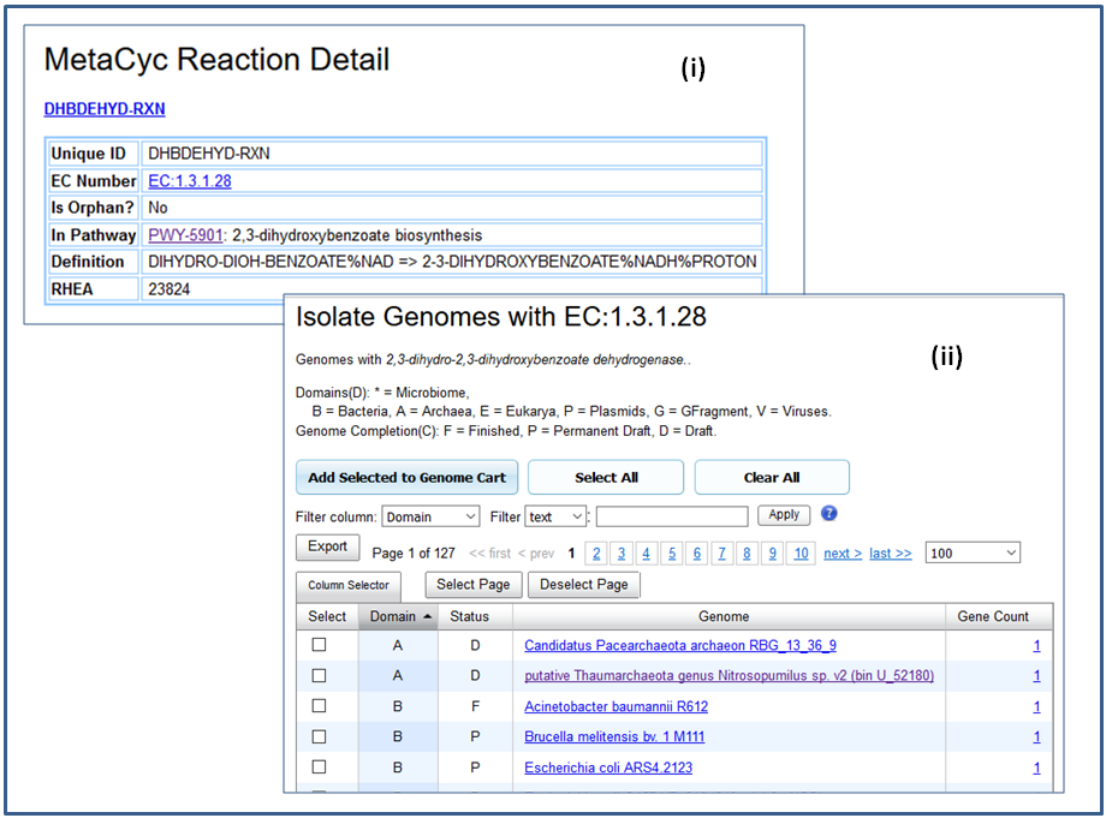

Figure 2. MetaCyc Reaction and Associated Genomes and Genes

Near the top of the MetaCyc Pathways page (Figure 1(i)) there is a "MetaCyc Compounds" link leads to a list of all MetaCyc compounds loaded in IMG (Figure 3(i)). Click on a Compound ID to view the detailed definition of the compound including compound name, molecular weight and SMILES as shown in Figure 3(ii).

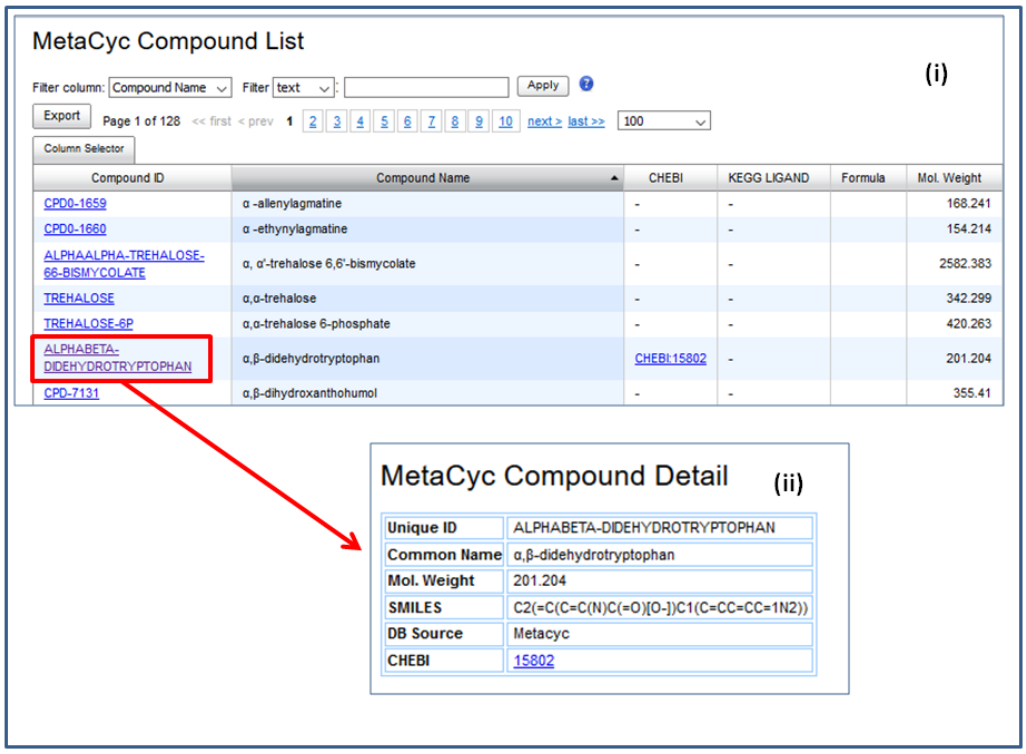

Figure 3. MetaCyc Compounds.